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Combating sand and dust storms

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Report of the Secretary-General

Summary

The present report, submitted pursuant to General Assembly resolution 72/225 on combating sand and dust storms, provides details on developments within the United Nations system since the first Assembly resolution on this topic (resolution 70/195) and covers the period from 2016 to mid-2018. The report highlights activities and initiatives undertaken by United Nations entities, Member States and a range of stakeholders and underscores achievements, including cross-cutting activities, made during the reporting period in the following three principal areas: monitoring, prediction and early warning; impact mitigation, vulnerability and resilience; and source mitigation.

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I. Introduction

1. In its resolution 72/225 on combating sand and dust storms, the General Assembly requested the Secretary-General to report to the Assembly at its seventy-third session on the implementation of the resolution and invited all relevant bodies, agencies, funds and programmes of the United Nations system and all other related organizations to integrate, in their respective cooperation frameworks, operational programmes, measures and actions aimed at combating sand and dust storms so as to address this problem and contribute to the enhancement of, inter alia, capacity-building at the national level, the implementation of regional and subregional projects, the sharing of information, best practices and experiences and the boosting of technical cooperation in the affected countries and countries of origin, to improve the implementation of sustainable land management practices, to take measures to prevent and control the main factors of sand and dust storms and to improve the development of early warning systems as tools to combat sand and dust storms in accordance with their strategic plans. The present report provides details on developments since the first Assembly resolution on combating sand and dust storms (resolution 70/195), covering the period from 2016 to mid-2018.

2. Sand and dust storms present a formidable challenge to achieving sustainable development in its three dimensions — economic, social and environmental. Accordingly, addressing the hazards associated with sand and dust storms will contribute to the achievement of the Sustainable Development Goals and targets adopted as part of the 2030 Agenda for Sustainable Development (see General Assembly resolution 70/1). Ensuring that global efforts to achieve sustainable development are not undermined by the multidimensional impacts of sand and dust storms requires an understanding of disaster risk for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters, as outlined in the Sendai Framework for Disaster Risk Reduction 2015–2030 endorsed in Assembly resolution 69/283.

3. The global nature of the issues associated with sand and dust storms is reflected in the fact that a total of 151 countries (77 per cent of all parties to the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa) are affected directly by sand and dust storms and that 45 countries (23 per cent of all parties to the Convention) are classified as sand and dust storm source areas. Most of the countries classified as source areas (38 out of 45) are in Africa and Asia.[1]

4. In providing information and updates on global efforts to combat sand and dust storms, in alignment with the Sustainable Development Goals,[2] the present report draws on contributions from the United Nations Environment Programme (UNEP), the World Meteorological Organization (WMO), the secretariat of the United Nations Convention to Combat Desertification, the Food and Agriculture Organization of the United Nations (FAO), the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Office for Disaster Risk Reduction and the World Health Organization (WHO).

[1] Nick Middleton and Utchang Kang, "Sand and dust storms: impact mitigation", *Sustainability*, vol. 9(6) (17 June 2017).

[2] Enric Terradellas, "Addressing sand and dust storms in SDG implementation", International Institute for Sustainable Development, SDG Knowledge Hub, 22 August 2017.

II. Developments since the adoption of General Assembly resolution 70/195

A. Cross-cutting developments

5. Various United Nations intergovernmental decisions have highlighted the importance of the sand and dust storms problem and called for assistance from the United Nations system. These include General Assembly resolutions 70/195, 71/219 and 72/225, United Nations Environment Assembly resolution 2/21 and ESCAP resolution 72/7. The International Conference on Combating Sand and Dust Storms, held in Tehran from 3 to 5 July 2017, the convening of which was noted in Assembly resolution 72/225, also deliberated the importance of addressing sand and dust storms, as reflected in the ministerial declaration and set of technical recommendations resulting from the conference. The conference was hosted by the Government of the Islamic Republic of Iran with the cooperation of UNEP, the United Nations Development Programme (UNDP) and the Department of Economic and Social Affairs, as well as other relevant United Nations entities.

6. During the thirteenth session of the Conference of the Parties to the United Nations Convention to Combat Desertification, held in Ordos, China, from 6 to 16 September 2017, the Conference adopted decision 31/COP.13, entitled "Policy Advocacy Framework[1] to combat sand and dust storms", in which it invited Parties to use the Policy Advocacy Framework. The Framework, developed in collaboration with UNEP and WMO, highlights three interrelated principal areas of action in policy development and implementation for sand and dust storms at all scales, as well as cross-cutting and integrated actions, and suggests principles for developing and implementing more proactive sand and dust storm policies, in particular resilience building and source mitigation.

7. In decision 31/COP.13, Parties to the Convention are also invited to mainstream sand and dust storm issues in national disaster risk reduction policies, explore options to integrate anthropogenic source mitigation measures into national voluntary land degradation neutrality target-setting, promote cooperation on sand and dust storms and facilitate information exchange and knowledge sharing and transfers, as appropriate, in the affected areas.

8. The Conference adopted two other decisions at its thirteenth session that include provisions for sand and dust storms. In decision 8/COP.13, the Conference requested the secretariat of the Convention to continue fostering partnerships to facilitate capacity development for risk and vulnerability assessments and mitigation of the impacts of sand and dust storms. In decision 9/COP.13, it requested the secretariat to build on and strengthen collaboration with relevant United Nations entities and the secretariats of the Rio Conventions, as well as development partners and relevant international organizations, to support activities to address sand and dust storms.

9. The Ordos Declaration urges a proactive approach to enhance cooperation and coordination at the global, regional and subregional levels to address the causes and impacts of sand and dust storms, including through the promotion of sustainable water use and land management, to reduce future risks and impacts.

10. The *Global Assessment of Sand and Dust Storms*, conducted by UNEP in partnership with WMO and the secretariat of the United Nations Convention to Combat Desertification, was transmitted by the Secretary-General to the General Assembly at its seventy-first session in September 2016 (A/71/376). The assessment provides a comprehensive overview of the global distribution of sand and dust storms

[1] See ICCD/COP(13)/19 and ICCD/COP(13)/19/Corr.1.

and their drivers, sources and impacts and sets out proposals for consolidated and coordinated technical and policy options for responding to sand and dust storms. These recommendations include an integrated policy framework to guide further action to mitigate sand and dust storms, which comprises the following:

(a) Measures to reduce anthropogenic emissions:

(i) Sustainable land and landscape management;

(ii) Climate change mitigation and adaptation;

(b) Physical protection of valuable assets, such as towns, infrastructure and irrigation schemes:

(i) Reducing wind speed through the planting of trees around urban areas and infrastructure to deposit sand and trap dust outside these areas;

(ii) Aerodynamic methods to prevent sand and dust accumulation, such as alignment of roads, removal of obstacles to wind and land shaping;

(c) Monitoring, prediction and warning systems for sand and dust storms:

(i) Monitoring of sand and dust storms through ground networks of meteorological and air-quality monitoring stations, combined with the use of satellite data;

(ii) Sand and dust storm forecasting and early warning systems, including mapping of trends and future scenarios of anthropogenic dust sources;

(d) Preparedness and emergency response procedures:

(i) Preparedness and emergency procedures for coping with sand and dust storm events (for example, for airport, rail and road closures; hospital emergency services; and advisory communications to public service institutions);

(ii) Public awareness of sand and dust storm risks (through education, media and social networks and telecommunication) and emergency procedures;

(iii) Mainstreaming sand and dust storms into disaster risk reduction and emergency response measures;

(e) Policies, legal frameworks and action plans to support the above actions:

(i) International environmental laws (for example, the Rio Conventions[4] and Sustainable Development Goal target 15.3 on land degradation neutrality) and initiatives (for example, the WMO Sand and Dust Storm Warning Advisory and Assessment System);

(ii) Regional frameworks, agreements and action plans;

(iii) National action plans;

(f) Research to reduce critical uncertainties:

(i) Improved knowledge on the interaction of dust with biogeochemical global systems and climate systems;

(ii) Improved methods for monitoring, prediction and early warning systems;

(iii) Assessing the impacts and costs of sand and dust storms at local to global scales.

[4] Convention on Biological Diversity, United Nations Convention to Combat Desertification and the United Nations Framework Convention on Climate Change.

11. Another key report covering sand and dust storms in Asia and the Pacific,[5] launched at the seventy-fourth session of ESCAP in May 2018, provides perspectives on ways to enhance the science-based understanding of sand and dust storms for policymakers and thus support the development of adaptation and mitigation policies by policymakers at the regional and national levels. The report presents an analysis of sand and dust storm events using Earth-observation satellite images and of potential drivers based on future climate scenarios. It also points to the risk hotspots and areas where there are gaps in information, cooperation and policy capacity. The report also highlights the shared vulnerability across wide areas of the Asia-Pacific region due to the nature of such storms. Combating this borderless phenomenon requires information sharing, dialogue and cooperation among the affected countries to arrive at risk-informed and climate-sensitive policy interventions.

12. The approach used by ESCAP to address sand and dust storms is based on a multi-hazard risk assessment and alert system for slow-onset disasters that covers drought, desertification and land degradation. Recognizing the transboundary nature of dust storms, ESCAP is facilitating multi-country coordinated policy actions. Such policies are already making positive impacts in China and Mongolia. In China, for example, an ecological restoration programme from 2001 to 2013 reduced the risk of sand and dust storms by up to 15 per cent in the North China Plain.

13. Through the regional cooperation mechanism for combating sand and dust storms adopted by ESCAP, which is aligned with the Sendai Framework for Disaster Risk Reduction, scientific assessments of the risk are conducted on a regular basis, risk governance is facilitated through a regional platform for stakeholders, investment in resilience is encouraged through the promotion of adaptation and mitigation measures and preparedness for response is strengthened through a better understanding of impacts. With a primary focus on the under-served subregions of ESCAP, including South-West and Central Asia, the ESCAP approach is to facilitate such cooperation around three main components:

(a) **Multi-hazard risk assessment**. A multi-hazard risk assessment and modelling approach will be used to identify the drivers of sand and dust storms, such as land degradation, poor water management, drought, desertification and climate change and their interactions. This approach will be piloted in South, South-West and Central Asia;

(b) **Alert system**. Given the strong correlation between drought, desertification and sand and dust storms, the tools and techniques being developed under the ESCAP Regional Cooperative Mechanism for Drought Monitoring and Early Warning and the WMO Sand and Dust Storm Warning Advisory and Assessment System will be used to develop an alert system for the semi-arid subregions of South, South-West and Central Asia;

(c) **Partnerships/network**. Stakeholders involved in combating sand and dust storms will be brought together to form an Asia-Pacific sand and dust storm network; the network will support analytical work, such as periodic risk assessments, provide feedback on the alert system and develop joint action plans involving both source and impacted countries.

14. The long-standing ESCAP programme to strengthen regional cooperation for disaster risk reduction and resilience provides a foundation for facilitating action around the three components outlined above in order to observe, predict, adapt and mitigate the risk of sand and dust storms. Technical articles on sand and dust storms

[5] ESCAP and the Asian and Pacific Centre for the Development of Disaster Information Management, *Sand and Dust Storms in Asia and the Pacific: Opportunities for Regional Cooperation and Action* (Bangkok, 2018).

were prepared by UNEP for various audiences to bring broader public attention to the issue of sand and dust storms and to communicate the importance of the problem, its causes and impacts and mitigation options, including a report entitled *Frontiers 2017: Emerging Issues of Environmental Concern* and the third edition of the *World Atlas of Desertification*. Sand and dust storms have also been included in the approved report outline for the special report on climate change, desertification, land degradation, sustainable land management, food security and greenhouse gas fluxes in terrestrial ecosystems of the Intergovernmental Panel on Climate Change, scheduled for publication in 2019.

15. Several other recent international meetings have included a significant focus on sand and dust storms. On 15 November 2016, UNDP and UNEP sponsored a side event on sand and dust storms at the twenty-second session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Marrakech, Morocco. ESCAP coordinated a high-level expert consultation on regional cooperation for combating sand and dust storms in Asia and the Pacific on 30 and 31 January 2018 in Tehran, and a side event on the challenge of sand and dust storms in the Near East and North Africa region was held on 8 May 2018 during the thirty-fourth FAO Regional Conference for the Near East at FAO headquarters in Rome.

16. Participants at the 2018 Asian Ministerial Conference on Disaster Risk Reduction, held from 3 to 6 July in Ulaanbaatar and coordinated by the United Nations Office for Disaster Risk Reduction, recognized the challenges posed by sand and dust storms as a key transboundary hazard in Asia, particularly in arid and semi-arid regions. At the conference, ESCAP, in partnership with the Governments of the Islamic Republic of Iran and Mongolia, organized an event which analysed the sand and dust events in 2018 and identified key lessons. One of the key lessons is the importance of regional multi-hazard alert mechanisms and early warning systems for slow-onset disasters. Only deeper partnerships between countries can mitigate risks across borders and enable vulnerable regions to adapt. For example, in May 2018, a powerful dust storm swept over the eastern part of the Islamic Republic of Iran, south-western Afghanistan and north-western Pakistan. At the same time, a toxic salt storm from the Aralkum Desert hit northern Turkmenistan and western parts of Uzbekistan. Sand and dust storms ensued, engulfing the densely populated parts of western and northern India, colliding with pre-monsoon winds and worsening severe air pollution. Despite individual efforts from countries to address the situation, it is estimated that millions of people were affected and over a thousand killed. In this regard, the 2018–2020 action plan of the Asia Regional Plan for Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 calls for assessing the full spectrum of disaster risk through the establishment of appropriate baseline information and comprehensive risk profiles, including the capture of data on the increasing magnitude of certain hazards, such as sand and dust storms, and the impact of such events in different dimensions.

17. Pursuant to General Assembly resolution 72/225, a high-level interactive dialogue on sand and dust storms was held at Headquarters in New York on 16 July 2018, bringing together Member States, United Nations entities, regional commissions and other stakeholders to discuss challenges related to sand and dust storms and ways to deal with them. The aim was to discuss action-oriented recommendations to address the challenges faced by the affected countries, including ways to improve policy coordination at the global level to tackle those challenges in the context of the Sustainable Development Goals. During the dialogue, the continuing need to confront the challenges presented by sand and dust storms was highlighted because of the associated economic, social and environmental costs, and

the need for a sense of collective responsibility; in particular, the need for greater cooperation was emphasized by many participants.

18. In paragraph 4 of resolution 72/225, the General Assembly invited the Executive Director of UNEP to consider initiating an inter-agency process involving relevant entities of the United Nations system, within their respective mandates and existing resources, and taking into account United Nations Environment Assembly resolution 2/21 and other relevant resolutions and decisions, to prepare a global response to sand and dust storms, including a situation analysis, a strategy and an action plan, which could result in the development of a United Nations system-wide approach to addressing sand and dust storms and could be used as an inter-agency framework for medium- or long-term cooperation and division of labour. UNEP has suggested that an inter-agency network could be established with the aim of enhancing cooperation and coordination on the sand and dust storms agenda. This would ensure a more coherent and consistent approach to tackling sand and dust storm issues at the global, regional and national levels.

B. Monitoring, prediction and early warning

19. WMO has documented considerable experience with sand and dust storm monitoring and prediction following the Fifteenth World Meteorological Congress, in 2007, which endorsed the launching of the WMO Sand and Dust Storm Warning Advisory and Assessment System.[6] More than 20 organizations currently provide daily global or regional dust forecasts in different geographical regions, thereby contributing to the data recorded in the System and thus enhancing the ability of countries to deliver timely, quality sand and dust storm forecasts, observations, information and knowledge to users through an international partnership of research and operational communities.

20. The WMO System, which is a global federation of partners organized around regional nodes, integrates research and user communities from various sectors, such as health, climate, energy, transport, aeronautics and agriculture. Currently there are three regional nodes: the Northern Africa-Middle East-Europe node (with its centre hosted in Spain),[7] the Asia node (with its centre hosted in China)[8] and the pan-America node (hosted in Barbados, with support from the United States of America).[9] There is a possibility of establishing a fourth regional node for Western Asia.

21. The main objective of the regional centres of the WMO Sand and Dust Storm Warning Advisory and Assessment System is to facilitate user access, particularly for national meteorological and hydrological services, to observational, assessment and forecast products, as well as to contribute to the enhancement of capacity-building. In May 2017, WMO approved a second operational centre, for Asia, hosted in China, following the establishment in February 2014 of the Barcelona Dust Forecast Center, which generates and distributes forecasts for North Africa, the Middle East and Europe. The Center also organizes training events on sand and dust storms, most recently in Istanbul, Turkey (October 2017), Cairo (February 2018) and San Cristobal de La Laguna, Spain (May 2018). It is also developing a sand and dust storm early warning system for Burkina Faso.

22. Stronger cooperation between FAO and WMO would enable the utilization of potential agricultural applications of the WMO Sand and Dust Storm Warning

[6] See www.wmo.int/sdswas.

[7] See http://sds-was.aemet.es.

[8] See http://eng.nmc.cn/sds_was.asian_rc.

[9] See http://sds-was.cimh.edu.bb/.

Advisory and Assessment System, and FAO has various assessment tools and mechanisms in place that could contribute to existing monitoring, prediction and early warning systems for sand and dust storms. A methodology for mapping land degradation and sustainable land management[10] was developed as part of the Land Degradation Assessment in Drylands project, in partnership with the World Overview of Conservation Approaches and Technologies. The methodology has been tested in China in areas where wind erosion and sand and dust storms are major types of land degradation. The new FAO indicator "C2" (based on a new assessment methodology of FAO), on direct agricultural loss attributed to disasters, is an effort led at the global level by FAO in close collaboration with the United Nations Office for Disaster Risk Reduction. The indicator is currently being integrated into the practices of national statistical offices and is the subject of various memorandums of agreement as part of the efforts to fulfil the objectives of the Sendai Framework for Disaster Risk Reduction and Sustainable Development Goal target 1.5.2; this process can be fine-tuned and used in other countries to collect data and monitor the impacts on agriculture of large-scale sand and dust storm events.

C. Impact mitigation, vulnerability and resilience

23. The secretariat of the United Nations Convention to Combat Desertification has been developing and testing, in collaboration with UNEP and WMO, methodology frameworks for economic impact assessment, risk assessment, vulnerability mapping, early warning and anthropogenic source mitigation, to be used by countries in the development and implementation of policies concerning sand and dust storms. The methodology for assessing economic impact has been tested in Kuwait, and the methodology for mapping vulnerability has been tested in China.

24. FAO recognizes that sand and dust storms jeopardize livelihood systems in affected areas and that they may lead to escalated movements of rural people from their home areas. However, a better understanding of the effects of sand and dust storms on agriculture and rural livelihoods is needed to inform the development of appropriate mitigation actions. A number of the organization's initiatives already have relevance for vulnerability and resilience, including the promotion of climate-smart agriculture in many countries to enhance the resilience of farmers and reduce their vulnerability to climate change, and the FAO resilience programmes, including the Regional Initiative on Building Resilience for Food Security and Nutrition for the Near East and North Africa region, which supports resilience building in a number of countries affected by sand and dust storms. With the Resilience Index Measurement and Analysis, FAO has a tool that can be adapted and used in the context of sand and dust storms to establish baselines of vulnerability and resilience of agricultural populations affected by sand and dust storms, particularly in protracted crisis situations in which sand and dust storm impacts may overlap with other threats.

25. FAO also supports the implementation and promotion of agroecological approaches for adaptation to climate change in the fields of sustainable agricultural development, food security and nutrition.[11] Following the first International Symposium on Agroecology for Food Security and Nutrition, held in 2014, FAO facilitated a global dialogue that involved approximately 1,350 multi-stakeholder participants from 162 member States taking part in a series of regional meetings in 2015 and 2016. At the thirty-fourth FAO Regional Conference for the Near East, mainstreaming agroecology was adopted in the three regional initiatives for the Near

[10] See www.fao.org/land-water/land/land-assessment/assessment-and-monitoring-impacts/en/.

[11] See http://www.fao.org/partnerships/civil-society/events/details-events/en/c/1073831/.

East on: water scarcity, small-scale family farming and building resilience for food security and nutrition.

26. Atmospheric dust has a number of serious health implications, and sand and dust storm issues will constitute an important component of a global coalition on health, environment and climate change launched in May 2018 by WHO, UNEP and WMO. The new coalition aims to improve coordination and reduce the annual 12.6 million deaths attributed to environmental risks, especially air pollution.

27. WHO regularly convenes the Global Platform on Air Quality and Health — with approximately 100 participants from international agencies, scientific research institutes and national institutions — under which a working group on sand and dust storms has been formed to discuss emerging issues and share information. As part of the current update to the WHO air quality guidelines, a report on the health effects of sand and dust storms is being finalized. WHO, in collaboration with experts from WMO, is developing standard operating procedures to assess and address the short-term health effects of desert dust. In addition, as part of its Sustainable Development Goal monitoring activities, WHO is involved, together with WMO, in assessing the dust share of fine particulate matter ($PM_{2.5}$).

28. The Asian and Pacific Centre for the Development of Disaster Information Management, based in Tehran, is a major regional initiative of ESCAP to provide support to countries in increasing their resilience through targeted capacity development for disaster information management and knowledge sharing. In partnership with UNEP, WMO and the secretariat of the United Nations Convention to Combat Desertification, the Centre aims to support partnerships and a regional network to strengthen analytical work, including periodic risk assessments, and to provide feedback on the above-mentioned alert system for the semi-arid subregions of South, South-West and Central Asia. In the course of its work, the Centre could develop joint action plans involving source and affected countries.

D. Source mitigation

29. Several United Nations bodies have been involved in recent work to mitigate sand and dust storm issues at the source. In June 2017, UNEP partnered with the Elion foundation in China to establish the Belt and Road Desert Green Economy Innovation Centre in the Kubuqi Desert to promote practical cooperation in desertification control and green development, building on Elion's 30 years of experience in restoring degraded land to support economic growth in this area, which was once a significant source of dust storms that affected northern parts of China, including Beijing. A key focus of the Innovation Centre is the establishment of an international platform on green desert economics that focuses on innovation and technology exchange. The aim is to combine sand control and ecological restoration with the development of new energy sources, ecological agriculture, ecotourism, natural health products and green financing to motivate private enterprises and make use of the desert as a natural resource to reduce poverty and conflicts and make private sector investment more efficient and sustainable. An interregional project involving China, Mongolia, and countries in Central Asia and West Asia is being launched. The new project will also build on ongoing efforts such as the Central Asian Initiative for Land Management and the support provided to countries under the United Nations Convention to Combat Desertification to achieve land degradation neutrality. The International Ecosystem Management Partnership, a UNEP partnership institute, carried out work in 2014 and 2015 to map sand and dust storm source areas in West Asia using multiple environmental datasets as part of a project that included the use of shared Chinese experience in mitigating sand and dust storms.

30. FAO initiatives are also relevant in some regions, such as the Near East and North Africa — one of the driest regions in the world — where poorly managed agricultural areas can become sources of sand and dust storms while simultaneously suffering from the effects of wind erosion. It is important to note that in the agricultural sector, source and impact mitigation measures cannot be easily separated and most measures discussed below also have considerable impact mitigation benefits.

31. Agriculture and land use planning and management can play a key role in proactively addressing and linking both the causes and effects of sand and dust storms. For this reason, FAO supports the efforts of countries in stabilizing sand dunes and further contributes to sand and dust storm source mitigation by promoting agroforestry, shelter belts and afforestation and reforestation programmes. The Forest and Landscape Restoration Mechanism, piloted by FAO in a number of countries, contributes to the scaling-up, monitoring and reporting of forest and landscape restoration efforts to improve the resilience, productivity and socioeconomic value of restored forest and landscapes. Also relevant is the Sustainable Forest Management Toolbox, developed by FAO as a comprehensive technical package of knowledge tools, best practices and examples of their application to facilitate the implementation of sustainable forest management in a variety of contexts. A number of FAO initiatives, such as the Global Framework on Water Scarcity in Agriculture[12] and the Global Soil Partnership,[13] support efforts to combat sand and dust storms by raising awareness and strengthening regional and interregional cooperation in the management of soil and water resources, the management of watersheds, the sustainable use of land and the management of drought and soil erosion.

32. The Great Green Wall for the Sahara and the Sahel Initiative, launched in 2007 by 11 Sahelo-Saharan countries[14] under the leadership of the Pan-African Agency of the Great Green Wall and the African Union, should contribute to the mitigation of sources of sand and dust storms in that part of Africa. The project, which is supported by several international organizations, including the World Bank Group, FAO, the Global Environment Facility and the secretariat of the United Nations Convention to Combat Desertification, promotes the rehabilitation of degraded lands along an 8,000-km stretch of the Sahel from the Atlantic coast of Senegal to the coast of Djibouti. Other collaborative projects that could contribute to the mitigation of sand and dust storm sources include the Greening Drylands Partnership, a trilateral collaboration between the United Nations Convention to Combat Desertification, UNEP and the Republic of Korea under the Changwon initiative, and the Northeast Asia Desertification, Land Degradation and Drought Network, a subregional implementing entity of the United Nations Convention to Combat Desertification in North-East Asia.

33. A lack of basic data and understanding of some aspects of the sand and dust storm issue is still apparent, as highlighted in the *Global Assessment of Sand and Dust Storms* (see para. 10). In response to this problem, the secretariat of the United Nations Convention to Combat Desertification has been developing, in collaboration with other entities of the United Nations system, including UNEP and WMO, a global base map of sand and dust storm sources to provide baseline information for establishing and implementing national voluntary targets related to sand and dust storms in the context of land degradation neutrality. The Global Mechanism and the secretariat of the Convention have implemented the Land Degradation Neutrality Target Setting Programme to assist countries in establishing voluntary land

[12] See www.fao.org/land-water/overview/wasag/en/.

[13] See www.fao.org/global-soil-partnership/en/.

[14] Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal and Sudan.

degradation neutrality targets in affected areas. Some countries identified indicators related to sand and dust storms and adopted measures, including sand dune fixation techniques, to achieve their targets.

III. Conclusions

34. There is a growing appreciation of sand and dust storm issues as the topic gains wider recognition as a result of to the economic, social and environmental costs involved. This is important because sand and dust storms present a serious challenge to the achievement of the Sustainable Development Goals and associated targets. Gaps remain in the understanding of sand and dust storm processes and impacts, as well as in the context of climate change, but a number of the critical uncertainties are being addressed in ongoing and new initiatives from a number of entities of the United Nations system and other stakeholders. Nevertheless, a comprehensive approach is still needed to identify the sources and dynamics of sand and dust storms globally and regionally and to develop scenarios based on alternative land uses and the scaling-up of sustainable land management practices and mitigation measures. Such a comprehensive approach should also aim to establish regional strategies and agreements to combat sand and dust storms and reduce the impact on livelihoods, food security and the health of people living in vulnerable areas.

35. As the topic has gained more attention, existing links between the relevant entities of the United Nations system working together on sand and dust storm issues are being strengthened; the different entities have different responsibilities pertaining to sand and dust storm issues that can complement each other if initiatives are well coordinated and agreed upon. Harmonization and coordination of these efforts can become the focus of the inter-agency network on sand and dust storms proposed by UNEP in response to paragraph 4 of General Assembly resolution 72/225. The establishment of such an inter-agency network would inject further energy into the gathering momentum behind sand and dust storm issues, and the efficient operation of the network would be an essential precursor to realizing the most effective ways of combating sand and dust storms as part of efforts made towards the achievement of the 2030 Agenda for Sustainable Development. The transboundary and multidisciplinary nature of many sand and dust storm issues represents a strong stimulus towards coordinated action by the United Nations system. The fact that sand and dust storms represent a key transboundary hazard in numerous parts of the world also enhances the need to strengthen subregional, regional and interregional cooperation. Governments and other stakeholders are encouraged to fortify existing links, forge new links and promote greater policy coherence and synergies among their policies and programmes to tackle sand and dust storm issues.